PROJECT FACT SHEET

CONTRACT TITLE: Vertical Seismic Profiling While Drilling (PARTNERSHIP)

ID NUMBER: ACTI-074

B&R CODE: AC1005000

CONTRACTOR: Lawrence Livermore National Laboratory

ADDR: P.O. Box 808
Livermore, CA 94551

DOE HEADQUARTERS PROGRAM MANAGER:
NAME: Edith C. Allison
PHONE: 202/ 586-1023

DOE PROJECT MANAGER:
NAME: Purna C. Halder
LOCATION: NPTO
PHONE: 918/ 699-2084
E-MAIL: phalder@npto.doe.gov

CONTRACT PROJECT MANAGER:

NAME: Fred Followill
PHONE: 925/ 422-3920
FAX: 925/ 423-7914
E-MAIL: followill@llnl.gov

PROJECT SITE
CITY: Livermore **STATE:** CA
CITY: **STATE:**
CITY: **STATE:**

CONTRACT PERFORMANCE PERIOD:
3/1/1995 to 12/31/1999

PROGRAM: Supporting Research
RESEARCH AREA: Partnership/Computational Technology
PRODUCT LINE: ADIS

FUNDING (1000'S)	DOE	CONTRACTOR	TOTAL
PRIOR FISCAL YRS	532	400	932
FISCAL YR 1999	0	0	0
FUTURE FUNDS	0	0	0
TOTAL EST'D FUNDS	532	400	932

OBJECTIVE: Exploit a new, patented technology which uses the seismic signals generated by a drill bit to produce a reverse Vertical Seismic Profile (VSP).

PROJECT DESCRIPTION:

Background:

Work to be Performed: This project will exploit a new, patented technology which uses the seismic signals generated by a drill bit to produce a reverse Vertical Seismic Profile (VSP). By acquiring and processing Seismic-Wile-Drilling (SWD) data, the position of the drill bit relative to a seismic reflection section can be determined on-site and in real time. This look-ahead-of-the-bit information can be used by the driller to set casing or increase mud weight prior to entering over-pressurized zones. The method does not require a pilot signal; thus it has application to many drilling environments and different bit types. There is no interruption of drilling and no associated costs for logging. The method is best implemented with an on-site computer to enhance timeliness and avoid large data-storage requirements.

PROJECT STATUS:

Current Work: Funding transferred to national lab; project initiated

LLNL, Utah Geophysical and the University of Utah are continuing with their processing of a dataset provided by one industrial participant (EXXON) and are currently negotiating with another (Union Pacific Resources) for another dataset in order to collaborate on a different geology site and drilling technology. Participants are processing and analyzing a field data set provided by Exxon, an industry participant.

Scheduled Milestones:

Accomplishments: Extended theory from 1-D to 2-D and 3-D applications.

Extend theory to "look-ahead-of-bit-while-drilling".

Demonstrated that auto-correlograms may be (time) migrated.

Developed forward finite-difference modeling and computer simulation codes.

Developed new signal-processing techniques to calculate auto-correlation.